Tuolumne River Flow and Diversion Summary
May 2013

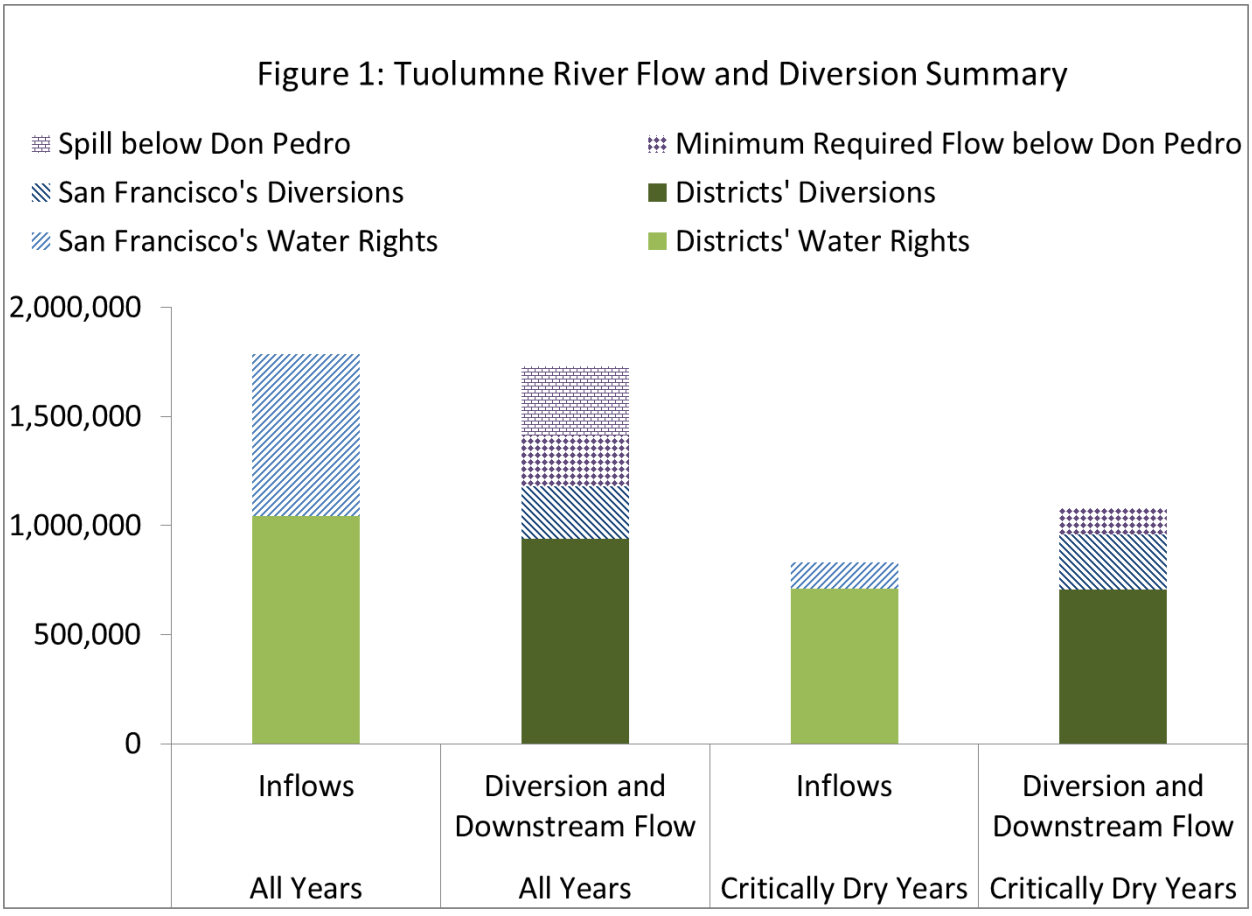
The Turlock and Modesto Irrigation Districts (Districts), along with the City of San Francisco, operate reservoirs and diversion projects on the Tuolumne River and its tributaries. The Districts operate Don Pedro Reservoir (2,030,000 acre-feet), although 740,000 acre-feet of this capacity is dedicated to a water bank for the benefit of San Francisco. San Francisco owns and operates Hetch Hetchy (360,000 acre-feet), Cherry (274,000 acre-feet) and Eleanor (26,000) Reservoirs. So the 2,700,000 acre-feet of storage in the Tuolumne watershed is divided roughly equally between San Francisco and the Districts.

The Tuolumne's natural flow is measured on a daily basis. For most of the year, the first 2416 cubic feet per second (cfs) accrue to the Districts under California's water rights system, with San Francisco receiving only any flow in excess of this 2416 cfs threshold. Between April 15 and June 13, this threshold is raised to 4066 cfs – again with San Francisco receiving only any flow in excess of 4066 cfs, and the Districts receiving the remainder of the natural flow.

On average, the annual flow of the Tuolumne River is about 1,800,000 acre-feet, with about 1,050,000 acre-feet accruing to the Districts and 750,000 acre-feet (41% of the total) accruing to San Francisco (see Table 1 and Figure 1)[i]. San Francisco's share of this water is roughly three times as much as they annually divert for use in the Bay Area (where most of the water is sold to other cities). Most of the water that accrues to San Francisco under its water rights is ultimately controlled by the Districts, which divert about 4 times as much water as San Francisco (mostly to local agriculture, but to local communities as well). The Districts also have responsibility for meeting minimum fishery flow requirements below Don Pedro Reservoir. Finally, in wetter years all reservoirs in the watershed often fill and excess flow will "spill" from Don Pedro Reservoir into downstream stretch of the Tuolumne River.

In the driest years the situation is very different. San Francisco's demand for Tuolumne River supplies does not change – rather it increases as less water is available in Bay Area watersheds. But the amount of the Tuolumne's natural flow which accrues to San Francisco under its water rights is very small in the driest years (only about 119,000 acre-feet or 14% of the river's total flow of 709,000 acre-feet) and is much less than its demand. San Francisco must draw down its storage to meet demand and under some conditions will impose rationing of supplies. San Francisco's reliability planning depends heavily on the possibility an extended drought wherein it must draw down its storage in successive years. The Districts also will rely on storage in the driest years, although not to the same degree (percentagewise) as San Francisco.

Table 1: Tuolumne River Flow and Diversion Summary				
Inflow	All Years		Critically Dry Years	
	Volume	Percent	Volume	Percent
Districts' Water Rights	1,046,689	59%	712,760	86%
San Francisco's Water Rights	741,320	41%	119,057	14%
Total	1,788,009		831,816	
Diversions and Downstream Flow	All Years		Critically Dry Years	
	Volume	Percent	Volume	Percent
Districts' Diversions	939,623	54%	708,863	66%
San Francisco's Diversions	241,728	14%	252,793	23%
Minimum Required Flow below Don Pedro	233,955	14%	119,527	11%
Spill below Don Pedro	315,806	18%	0	0%
Total	1,731,113		1,081,184	



[i] Data presented herein is summarized from water system modeling of existing conditions provided in "Paradise Regained", Environmental Defense Fund, 2004.